Delivering NextGen

Next Generation Air Transportation System

Federal Aviation Administration

Flexible Terminal Airspace

January 29, 2009

NextGen Mid-Term
Flexible Terminal Airspace

Definition

Flexible Terminal Airspace solution set covers the terminal and airport operations for all airports. The focus of FLEX is on advanced separation procedures and improves trajectory management.

Capabilities

Wind Based Wake Procedures [102140]

Ground Based Augmentation System Precision Approach [107107]

Use Optimized Profile Descent [104124]

Provide Full Surface Situation Information [102406]

Enhanced Surface Traffic Operations [104207]

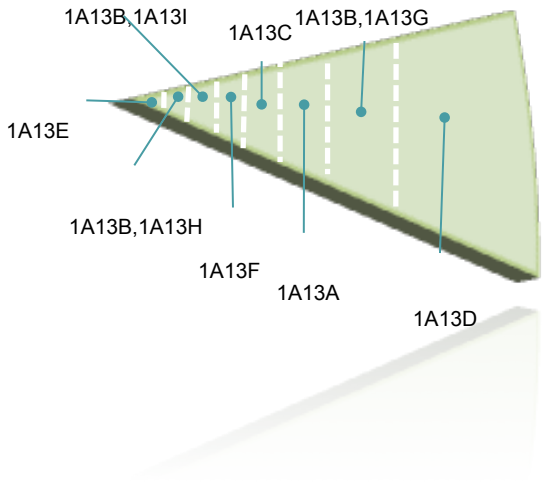
Operational Objectives

- Safe and Efficient Separation Management
- Management of Trajectories

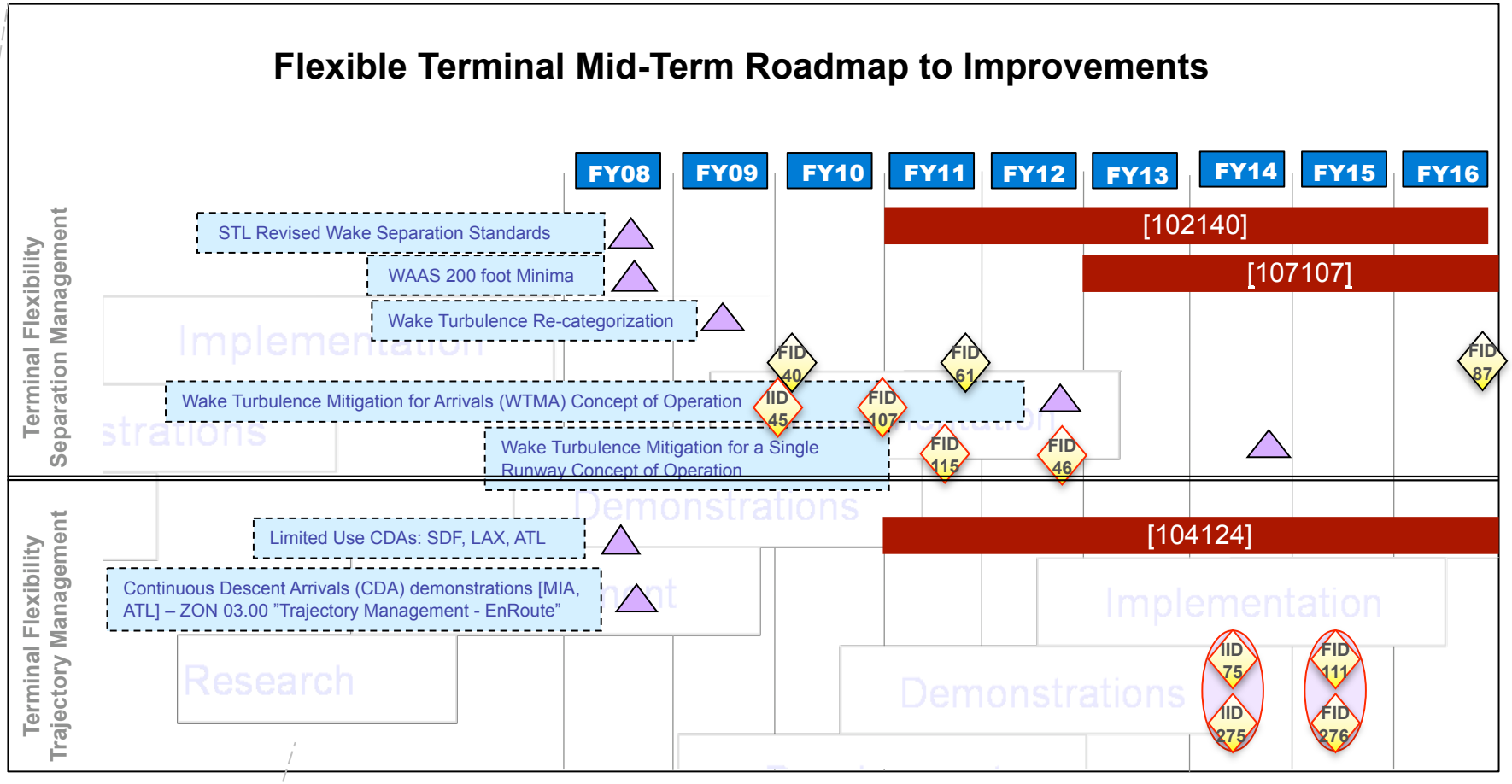
FY09 Activities

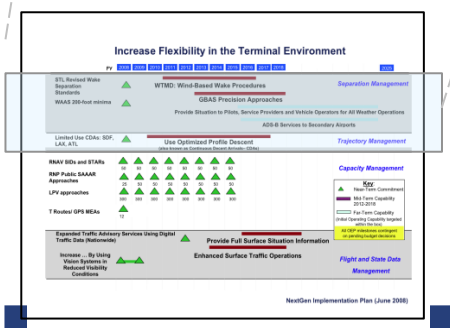
1A13A	Wake Turbulence Research
1A13B, 1A13G	Ground Based Augmentation System
1A13B, 1A13I	Optimized Navigation Technology
1A13B, 1A13H	Approaches, New Navigation Initiatives
1A13C	RNAV/RNP with 3D and Required Time of Arrival
1A13D	Surface/Tower/Terminal Systems Engineering
1A13E	Avionics
1A13F	Closely Spaced Parallel Runway Operations

Funding



Flexible Terminal Mid-Term Roadmap to Improvements





Date: January 29, 2009

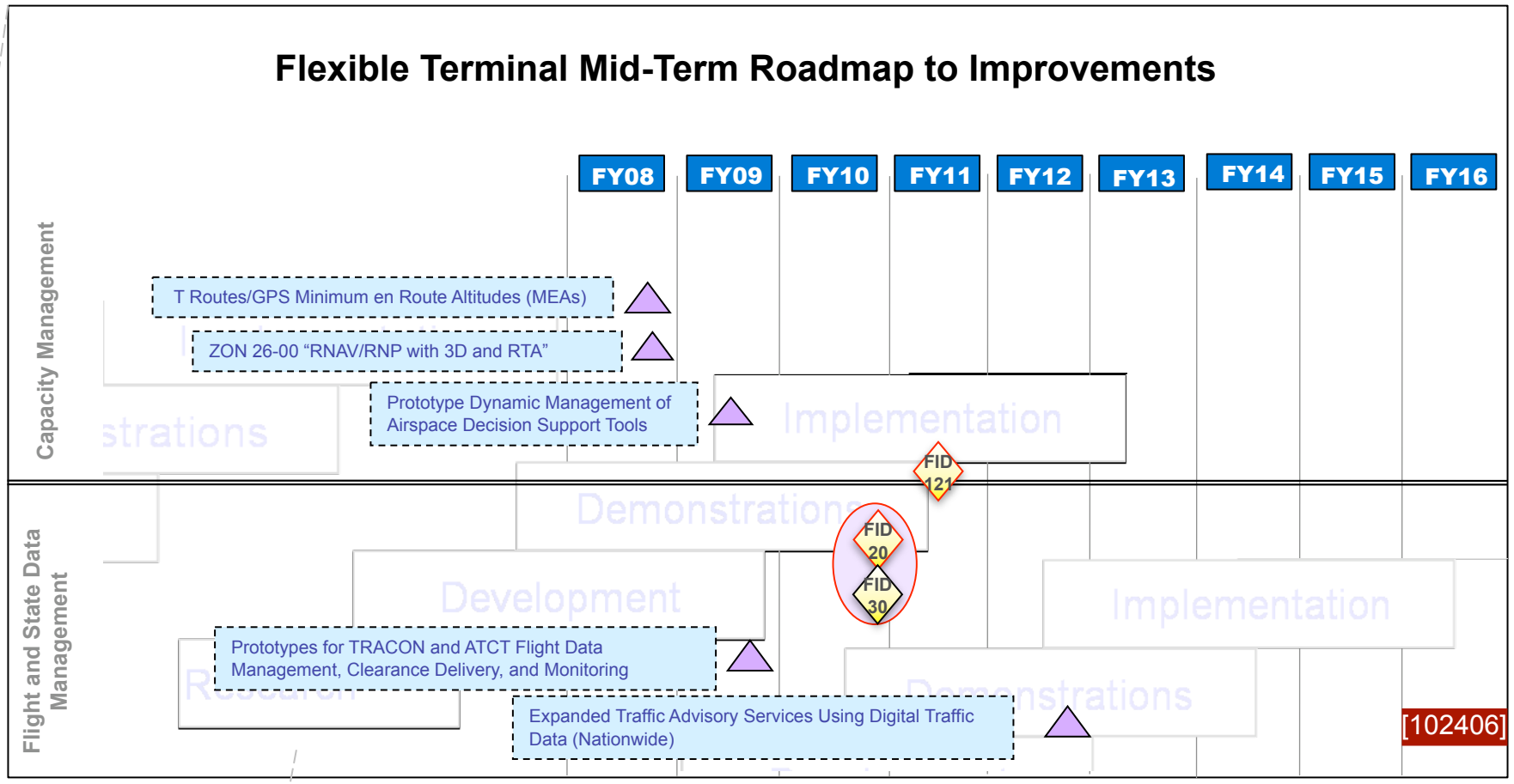
Capability Description

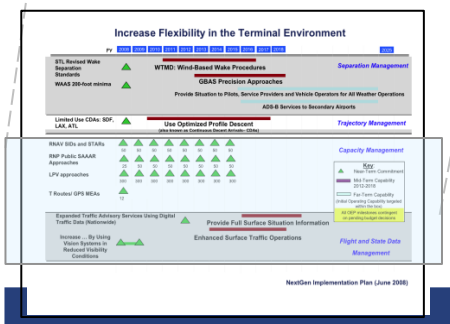
102140 - Wind Based Wake Procedures – Changes to wake rules will be implemented based on wind measurements. Procedures will allow more closely-spaced departure operations to maintain airport/runway capacity.

107107 – GBAS Precision Approach – Global Positioning System (GPS)/GBAS will support precision approaches to Category I (as a non-federal system), and eventually Category II/III minimums for properly equipped runways and aircraft. GBAS can support approach minimums at airports with fewer restrictions to surface movement and offers the potential for curved precision approaches. GBAS also can support high-integrity surface movement requirements.

104124 – Use Optimized Profile Descent – Optimized Profile Descents (OPDs) (also known as Continuous Decent Arrivals -- CDAs) will permit aircraft to remain at higher altitudes on arrival at the airport and use lower power settings during descent. OPD arrival procedures will provide for lower noise and more fuel-efficient operations. The air navigation service provider procedures and automation accommodate OPDs will be employed, when operationally advantageous.

Flexible Terminal Mid-Term Roadmap to Improvements





Capability Description

102406 – Provide Full Surface Situation Information – Automated broadcast of aircraft and vehicle position to ground and aircraft sensors/receivers will provide a digital display of the airport environment. Aircraft and vehicles will be identified and tracked to provide a full comprehensive picture of the surface environment to the Air Navigation Service Provider (ANSP), equipped aircraft, and Flight Operations Centers.

NextGen Mid-Term
Relevant EA Decisions

Flexible Terminal		
Decision Point (DP#)	Decision Point Description	Target Dates
20	Approve EFS final investment to migrate towards TFDM functional capability	2010
30	Approve migration of ARMT, DFM and TMA Tower displays to TFDM and/or TFMS WP	2010
40	FID to acquire & deploy initial Wake Turbulence (WT) capability for Mitigation for Departures (WTMD) from Closely Spaced Parallel Runways (CSPR)	2010
45	Terminal Automation Modernization and Replace (TAMR) Phase 3 Initial Investment Decision	2009
46	Approve Tower Flight Data Manager 2 final investment	2012
61	FID to add WT for Mitigation for Arrivals (WTMA) from Closely Spaced Parallel Runways (CSPR)	2011
75	Approve En Route Automation NextGen Mid-Term Work package initial investment	2014
87	FID to add WTMA (WT Mitigation for Arrivals) from Closely Spaced Parallel Runways (CSPR) decision support capability	2016
107	TAMR Phase 3 FID	2010
111	Approve En Route Automation NextGen Mid-Term Work package final investment	2015
115	Approve Tower Flight Data Manager 2 initial investment	2011
121	AIM Modernization Segment 2 FID	2011
275	Terminal Automation NextGen Mid-Term Work package Initial investment	2014
276	Terminal Automation NextGen Mid-Term Work package Final investment	2015

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BLI -1A13A

Separation Management – Wake Turbulence Mitigation for Departures

FY09 Milestones	Q1	Q2	Q3	Q4
Finalize Contract Award			■	
Complete Wake Turbulence Mitigation for Departures, FID		■		

BLI -1A13D

Flight and State Data Management– Surface/Tower/Terminal Systems Engineering

FY09 Milestones	Q1	Q2	Q3	Q4
Assure Departure Route Availability – Reduce Departure Delays ,Manage Surface Movement, Departure Queue Length and Departures Sequencing – Reduce Fuel Burn and Emissions , Enhance Situational Awareness – Enhance Airport Safety and Efficiency				■

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BLI -1A13B, 1A13G

Separation Management – Approaches, Ground Based Augmentation System

FY09 Milestones	Q1	Q2	Q3	Q4
Complete Project Plan and Schedule				
Update Category-III System Design Approval Planning Documents				
Complete Draft Category-I Safety Risk Management Documentation				
Update Changes to CAT-III Ground Specification to Incorporate Validations Changes				
Complete Draft Category-I Security Certification Authorization Package				

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Separation Management – Closely Spaced Parallel Runway Operations

FY09 Milestones	Q1	Q2	Q3	Q4
Complete Project Plan and Schedule				
Establish Cross-Agency Team to Support Integration of all Related Efforts				
Coordinate Initial Project and Simulation Trial Plans				
Conduct Initial Simulator Trials of CSPO				

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BLI -1A13B, 1A13H

Separation Management – Approaches, New Navigation Initiatives

FY09 Milestones	Q1	Q2	Q3	Q4
Complete Installation of a Runway Visual Range Enhancement at One Airport Site for Validation and Data Collection to Support Implementation of Runway Visual Range Enhancements to Improve Lower Visibility Operations				
Complete Installation of Low Power Distance Measuring Equipment at One Site for Validation and Data Collection				
Conduct Engineering Analysis of Surface Navigation Improvements				

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BLI -1A13B, 1A13I

Separation Management – Approaches, Optimize Navigation Technology

FY09 Milestones	Q1	Q2	Q3	Q4
Award MALSR LED / IR Lamp Contract	■			
Complete LED MALSR LED / IR Lamp Prototypes Design			■	
Conduct Design Qualification Testing and Evaluation of the Prototypes			■	
Build and Deliver MALSAR LED / IR Lamps for One to Three Full Systems				■
Develop Procurement Plan for LED PAPI		■		
Develop Implementation Strategy and Plan for LED PAPI			■	
Develop Statement of Work Section B-J for LED PAPI				■
Issue Screening of Information Request for LED PAPI				■
Engineering Manufacturing Development of LED PAPI Prototypes				■

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Trajectory Management – Arrivals

FY09 Milestones	Q1	Q2	Q3	Q4
Project Schedule				
Concept Development for Area Navigation /Required Navigation Performance 3D and Control by Required Time of Arrival				
Modeling and Simulation to Optimize Procedure Design 3D Area Navigation and Required Navigation Performance				
Complete Analysis of Alternative to AccomplishControl By Time Arrival Including RTA				

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BLI -1A13E

Flight and State Data Management – Avionics

FY09 Milestones	Q1	Q2	Q3	Q4
Complete ConOps for Flight Deck Moving Maps that Support Taxi Instructions, Taxi Conformance Monitoring, and Surface Separation. Initial Evaluations of Performance Using Prototype Taxi Conformance Algorithms in a HITL Simulation				